OBSERVATIONS & RECOMMENDATIONS

After reviewing data collected from **MELENDY POND AND LAKE POTANIPO** the program coordinators recommend the following actions.

Welcome to the New Hampshire Volunteer Lake Assessment Program! As you continue your participation in VLAP the database you create for your water body will help you track trends in lake quality and identify potential problems. As a rule of thumb, try to sample once per month during the summer. Other special sampling programs include monitoring for non-point sources of pollution to the lake, and more frequent, long-term sample collection to establish a complex data set of your lake's water quality. We understand that future sampling will depend upon volunteer availability, water monitoring goals, and funding. **Trend analysis is not feasible with only a few data points.** It can take a few years of data collection to obtain an adequate set of baseline data. Frequent and consistent sampling will ensure useful data for future analyses. Contact the VLAP Coordinator this spring to schedule our annual lake visit. If your group feels they need a refresher in sampling techniques, call us early to make an appointment. Please consult the Interpreting Data and Monitoring Parameters sections of this report when trying to understand data.

MELENDY POND

FIGURE INTERPRETATION

- Figure 1: These graphs illustrate concentrations of chlorophyll-a, also a measure of algal abundance, in the water column. Algae are microscopic plants that are a natural part of lake ecosystems. Algae contain chlorophyll-a, a pigment necessary for photosynthesis. A measure of chlorophyll-a can indicate the abundance of algae in a lake. The current year data (the top graph) show a *low* in-lake chlorophyll-a concentration. The May sample concentration was well below the state mean. Sampling later in the summer may be beneficial to determine if there are problems with late blooming algae. While algae are present in all lakes, an excess amount of any type is not welcomed. Concentrations can increase when there are external and internal sources of phosphorus, which is the nutrient algae depend upon for growth. It's important to continue the education process and keep residents aware of the sources of phosphorus and how it influences lake quality.

- Figure 2: Water clarity is measured by using a Secchi disk. Clarity, or transparency, can be influenced by such things as algae, sediments from erosion, and natural colors of the water. The graphs on this page show historical and current year data. The upper graph shows a *high* in-lake transparency level. The May reading was higher than the state mean. The 2000 sampling season was considered to be wet and, therefore, average transparency readings are expected to be slightly lower than normal. Higher amounts of rainfall usually cause more eroding of sediments into the lake and streams, thus decreasing clarity. With only one data point it is not possible to determine if the pond was impacted by the rainy summer.

- Figure 3: These figures show the amounts of phosphorus in the epilimnion (the upper layer in the lake) and the hypolimnion (the lower layer); the inset graphs show current year data. Phosphorus is the limiting nutrient for plants and algae in New Hampshire waters. Too much phosphorus in a lake can lead to increases in plant growth over time. These graphs show in-lake phosphorus levels are slightly higher than the state mean. One possible reason the concentration was high could be that the anchor was not secure on the bottom. The anchor was likely turning up the bottom sediment, thereby releasing nutrients into the water column. Using an anchor appropriately sized for the boat and bottom sediment composition will help to obtain a secure position. One of the most important approaches to reducing phosphorus levels is educating the public. Humans introduce phosphorus to lakes by several means: fertilizing lawns, septic system failures, and detergents containing phosphates are just a few. Keeping the public aware of ways to reduce the input of phosphorus to lakes means less productivity in the lake. Contact the VLAP coordinator for tips on educating your lake residents or for ideas on testing your watershed for phosphorus inputs.

OTHER COMMENTS

- When beginning a sampling program we understand it can be difficult at first to organize and coordinate the volunteers. That was the case this year for Melendy Pond and Lake Potanipo. We hope the volunteers will be able to coordinate sampling dates in 2001 so more than one sample can be taken. Please remember the water quality lab at Franklin Pierce College in Rindge, N.H. is fully functional and able to lend bottles and equipment. The lab will also analyze your samples, thereby making a drive to Concord unnecessary. To find out more about the lab or to set up a date to pick up bottles call Michele Hood, the lab manager, at (603) 899-4384.

- Small amounts of the filamentous blue-green alga *Anabaena* were observed in the plankton sample this year. Blue-green algae can reach nuisance levels when sufficient nutrients and favorable environmental conditions are present. While overall algal abundance continues to be low in the lake, the presence of these indicator species should serve as a reminder of the lake's delicate balance. Continued care to protect the watershed by limiting or eliminating fertilizer use on lawns, keeping the lake shoreline natural, and properly maintaining septic systems and roads will keep algae populations in balance. The main group of algae found in the pond this year was the golden-brown algae. For more information about algae please refer to the Biological Monitoring Parameters section of this report on page 9.

- In-lake conductivity is very low in Melendy Pond (Table 6). Conductivity was particularly low throughout the state this year, most likely as a result of the excess rains, which tend to flush out any pollutants. Conductivity increases often indicate the influence of human activities on surface waters. This low result is a positive sign. Septic system leachate, agricultural runoff, iron deposits, and road runoff can all influence conductivity.

- Dissolved oxygen was high in the pond (Table 9). Shallow ponds are generally mixed continuously by wind and wave action. The dissolved oxygen levels observed in Melendy Pond will support aquatic life.

NOTES

- Monitor's Note (5/15/00): Drifting during sampling.

LAKE POTANIPO

No in-lake samples were taken at Lake Potanipo this year, due in part to high winds and a short anchor line. Tributary samples were taken at Lancey Brook, North Stream, and the Outlet.

- Conductivity values were low at all three tributary stations (Table 6). We will watch for this trend to continue in the coming years.

- Lancey Brook had the highest total phosphorus concentration of the three tributaries (Table 8). Please refer to page 13 of the Chemical Monitoring Parameters section of the report for more information on good values for total phosphorus.

USEFUL RESOURCES

Effects of Phosphorus on New Hampshire's Lakes, NH Lakes Association pamphlet, (603) 226-0299 or www.nhlakes.org

What is a Watershed?, NH Lakes Association pamphlet, (603) 226-0299 or www.nhlakes.org

Diet for a Small Lake: A New Yorker's Guide to Lake Management. Federation of Lake Associations, Cazenovia, NY, 1990. (315) 655-4760

Road Salt and Water Quality, WD-WSQB-7, NHDES Fact Sheet, (603) 271-3503 or www.state.nh.us

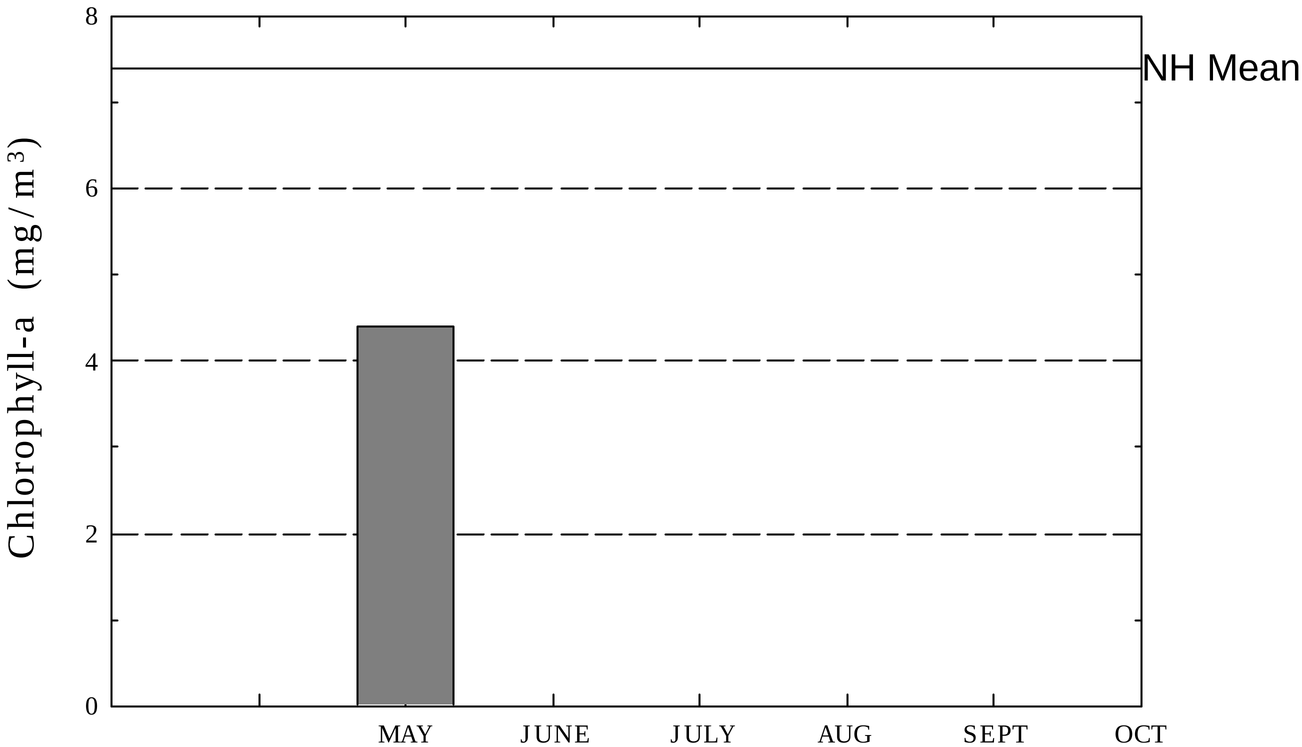
2000

A Boater's Guide to Cleaner Water, NHDES pamphlet, (603) 271-3503 or www.state.nh.us

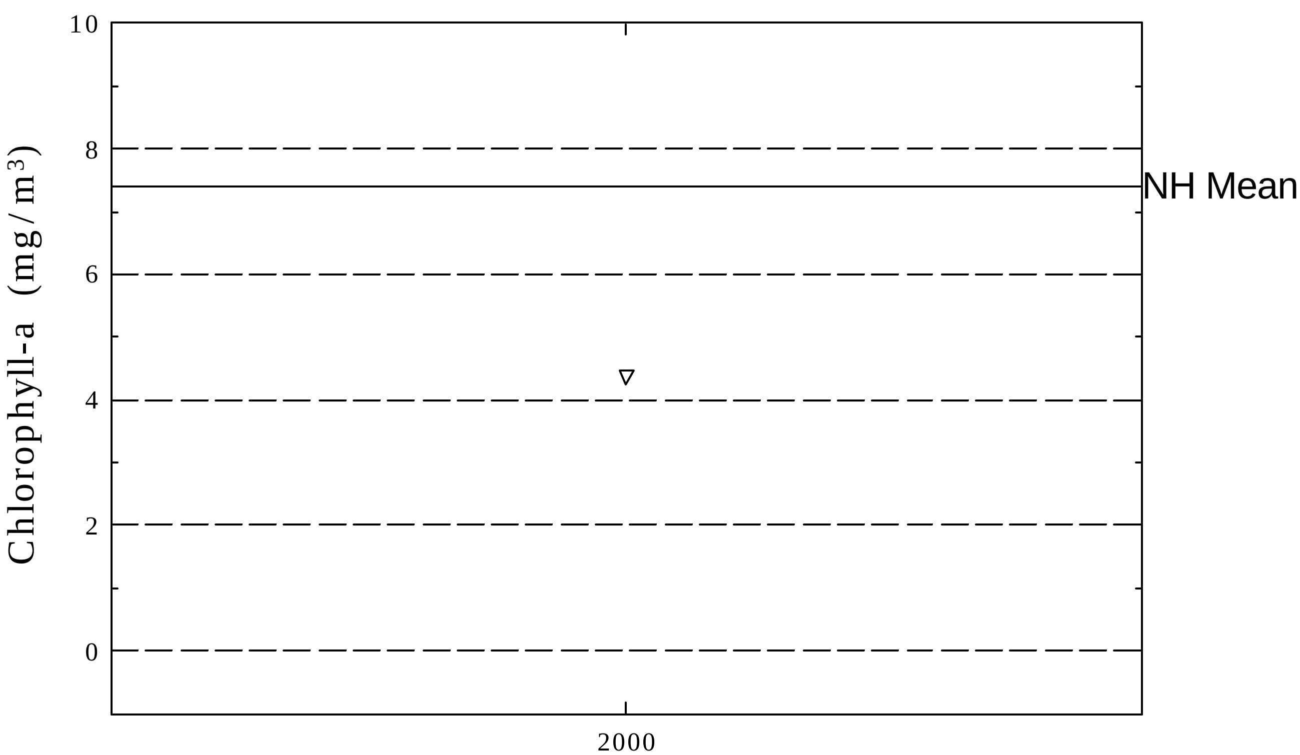
The Blue Green Algae. North American Lake Management Society, 1989. (608) 233-2836 or www.nalms.org

Melendy Pond

Figure 1. Monthly and Historical Chlorophyll-a Results



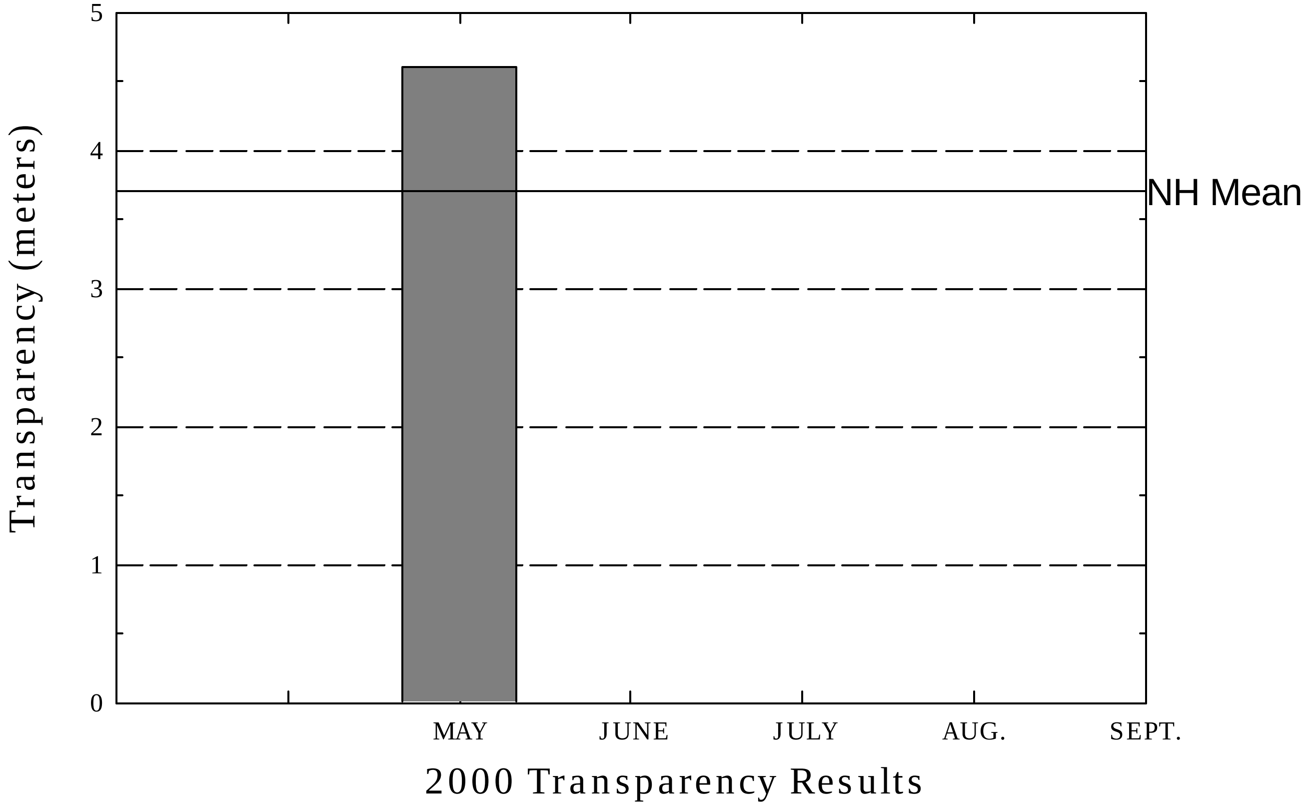
2000 Chlorophyll-a Results

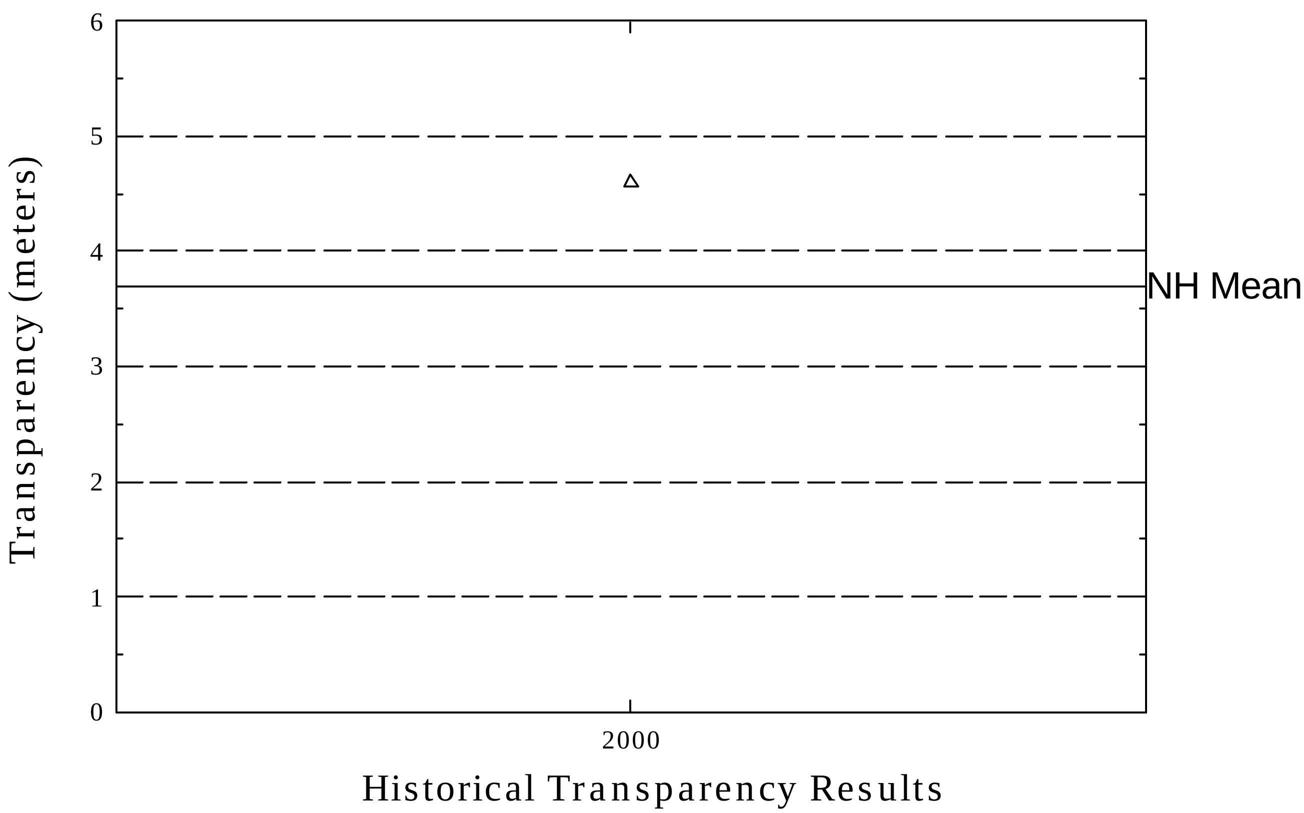


Historical Chlorophyll-a Results

Melendy Pond

Figure 2. Monthly and Historical Transparency Results





Melendy Pond

Figure 3. Monthly and Historical Total Phosphorus Data.

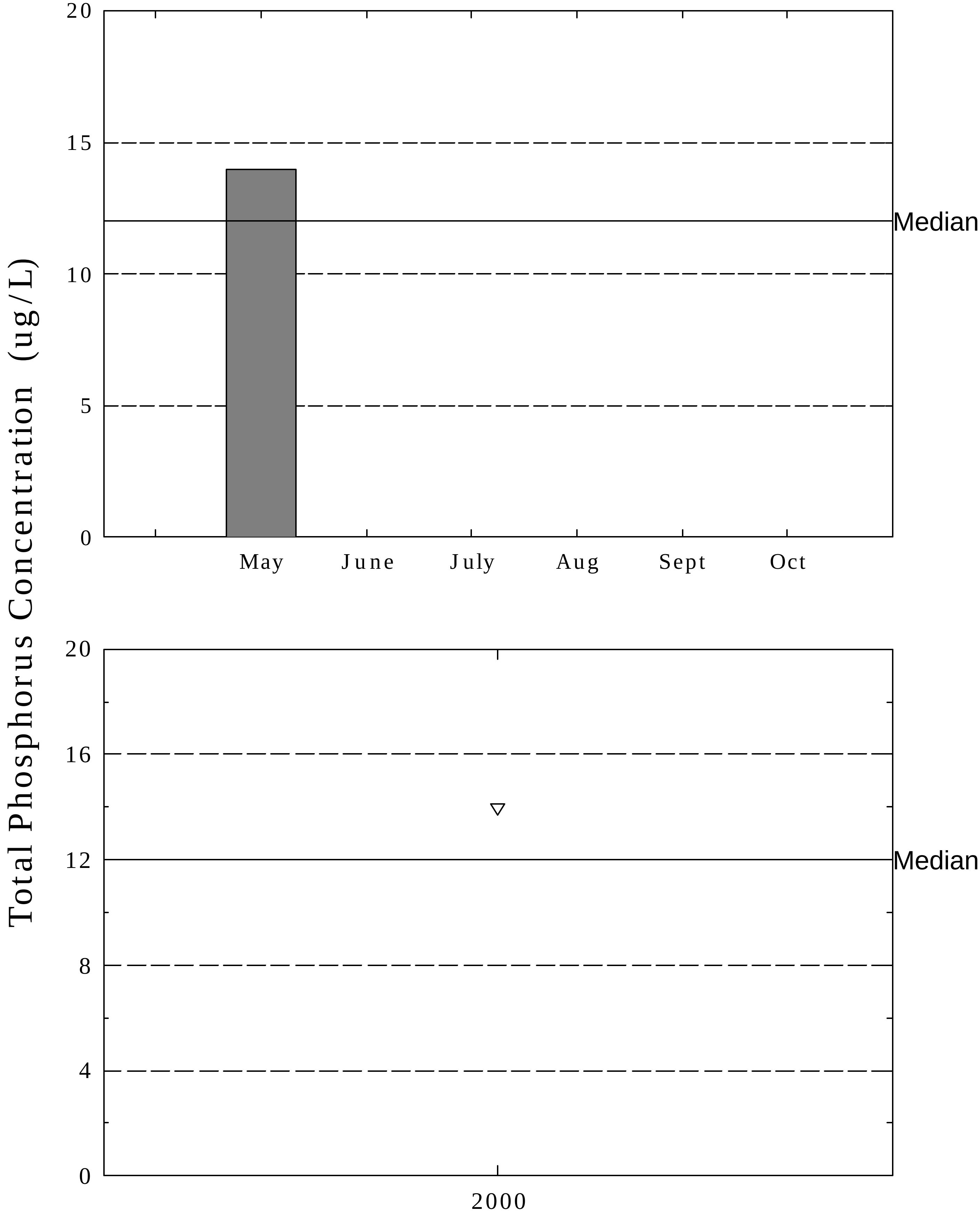


Table 1.

MELENDY POND

BROOKLINE

Chlorophyll-a results (mg/m^3) for current year and historical sampling periods.

Year	Minimum	Maximum	Mean
2000	4.39	4.39	4.39

Table 2.

MELENDY POND

BROOKLINE

Phytoplankton species and relative percent abundance.

Summary for current and historical sampling seasons.

Date of Sample	Species Observed	Relative % Abundance
05/15/2000	UROGLENOPSIS	65
	STAURASTRUM	8
	MALLOMONAS	8

Table 3.

MELENDY POND

BROOKLINE

Summary of current and historical Secchi Disk transparency results (in meters).

Year	Minimum	Maximum	Mean
2000	4.6	4.6	4.6

Table 4.

MELENDY POND

BROOKLINE

pH summary for current and historical sampling seasons.
Values in units, listed by station and year.

Station	Year	Minimum	Maximum	Mean
EPILIMNION				
	2000	6.32	6.32	6.32

Table 5.

MELENDY POND

BROOKLINE

Summary of current and historical Acid Neutralizing Capacity.
Values expressed in mg/L as CaCO .

Epilimnetic Values

Year	Minimum	Maximum	Mean
2000	3.20	3.20	3.20

Table 6.

MELENDY POND
BROOKLINE

Specific conductance results from current and historic sampling seasons. Results in uMhos/cm.

Station	Year	Minimum	Maximum	Mean
EPILIMNION				
	2000	35.1	35.1	35.1

Table 8.

MELENDY POND

BROOKLINE

Summary historical and current sampling season Total Phosphorus data. Results in ug/L.

Station	Year	Minimum	Maximum	Mean
EPILIMNION				
	2000	14	14	14

Table 9.

MELENDY POND
BROOKLINE

Current year dissolved oxygen and temperature data.

Depth (meters)	Temperature (celsius)	Dissolved Oxygen (mg/L)	Saturation (%)
May 15, 2000			
0.1	17.0	6.7	69.0
1.0	16.8	6.7	69.5
2.0	16.1	7.2	72.8
3.0	13.5	7.0	67.4
3.5	12.2	7.2	67.2

Table 10.

MELENDY POND

BROOKLINE

Historic Hypolimnetic dissolved oxygen and temperature data.

Date	Depth (meters)	Temperature (celsius)	Dissolved Oxygen (mg/L)	Saturation (%)
May 15, 2000	3.5	12.2	7.2	67.2

Table 11.

MELENDY POND

BROOKLINE

Summary of current year and historic turbidity sampling.
Results in NTU's.

Station	Year	Minimum	Maximum	Mean
EPILIMNION				
	2000	0.3	0.3	0.3

Table 4.

POTANIPO, LAKE
BROOKLINE

pH summary for current and historical sampling seasons.
Values in units, listed by station and year.

Station	Year	Minimum	Maximum	Mean
LANCEY BROOK				
	2000	5.68	5.68	5.68
NORTH STREAM				
	2000	5.83	5.83	5.83
OUTLET				
	2000	6.02	6.02	6.02

Table 6.

POTANIPO, LAKE
BROOKLINE

Specific conductance results from current and historic sampling seasons. Results in uMhos/cm.

Station	Year	Minimum	Maximum	Mean
LANCEY BROOK				
	2000	27.0	27.0	27.0
NORTH STREAM				
	2000	32.8	32.8	32.8
OUTLET				
	2000	32.6	32.6	32.6

Table 8.

POTANIPO, LAKE
BROOKLINE

Summary historical and current sampling season Total Phosphorus data. Results in ug/L.

Station	Year	Minimum	Maximum	Mean
LANCEY BROOK				
	2000	16	16	16
NORTH STREAM				
	2000	12	12	12
OUTLET				
	2000	12	12	12

Table 11.

POTANIPO, LAKE
BROOKLINE

Summary of current year and historic turbidity sampling.
Results in NTU's.

Station	Year	Minimum	Maximum	Mean
LANCEY BROOK				
	2000	0.3	0.3	0.3
NORTH STREAM				
	2000	0.4	0.4	0.4
OUTLET				
	2000	0.4	0.4	0.4